



NEWSLETTER OF THE Z88 USERS' CLUB

SEPTEMBER/OCTOBER 1988

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THE CLUB ADDRESSES

Any articles for Z88 EPROM or any other correspondence (except Software Library) should be sent to:

**Z88 USERS' CLUB
68 WELLINGTON STREET
LONG EATON
NOTTINGHAM
NG10 4NG**

All requests for software from the Club Software Library, EPROMs for erasure, and items for inclusion in the Library should be sent to:

**THE SOFTWARE LIBRARY
Z88 USERS' CLUB
3/8 JENNER ROAD
GUILDFORD
SURREY
GU1 3PL**

Always include your Membership Number with any correspondence. This is printed on the address label of each issue of Z88 EPROM. Please be sure to enclose a stamped-addressed envelope with anything requiring a reply.

EDITORIAL

This issue marks the first birthday of the Club, a year in which we have seen relatively little support for our favourite machine. Only a handful of programs are available, and there has been an almost abortive attempt to give the Z88 its own magazine (no sign of the second issue yet!) Let's all hope that the next year holds more excitement for the Z88 and its many users around the world.

Z88 EPROM is fuller than ever this issue - I have changed to printing it out in 12-pitch rather than my normal 10-pitch, in an effort to put in more members' articles, and reduce my pile of articles awaiting inclusion. Printing it in 12-pitch amounts to 20% extra text!

Following the recent additions to the Software Library, I have been getting a large quantity of EPROMs for copying. This has meant many a happy hour spent copying software, and has left me with less time than normal to answer members' queries and do the thousand and one other things involved in running the Club. In order to relieve my workload slightly, Ian Braby has kindly offered to take on the running of the Software Library, and has been duly appointed as Club Software Librarian. In future be sure to send all requests for software, and items for inclusion in the Library, to Ian at the address above. Ian will also erase EPROMs, which can be sent to either address.

On the point of EPROM erasure, would you please include the 50p erasure fee in cash, as it takes me a long time to process and bank all the cheques the Club receives anyway, without having dozens of extra cheques for 50p. Another point with EPROMs, some people still insist on sending them in a normal envelope, which is very dangerous and likely to lead to loss in the post. Finally, although many people don't bother with 32k EPROMs, those of you who normally send them recorded delivery might like to try a cheaper service - ask for a free Certificate of Posting when you post it - this gives compensation of up to £20 in the event of loss.

A couple of quick moans: Still no sign of the Advanced User Guide from Protechnic; no sign of the BASIC guide from M-Tec - what do they think they are playing at?

I was hoping to put part one of my review of PC PipeDream in this issue, but problems with my PC have prevented me from doing this. A review will definitely appear in the next issue, but if you cannot wait, by the time you read this I should have an intermediate review, and will be able to supply advance copies if you send me a stamped addressed envelope clearly marked "PC PipeDream Review".

SPECIAL MEMBERS' OFFER

Having been very impressed while reviewing the new Spellmaster spelling checker from Computer Concepts, I have managed to negotiate a special offer for Club members, but only for a limited period of time.

The normal retail price of Spellmaster is £59.00 inc. VAT, but **UNTIL THE END OF OCTOBER** only, you can buy the program through the Z88 Users' Club for just **£50.00** inc. VAT and post and packing! This means that you are getting a 60,000 word spell checker for the same price as as you would pay for a blank 128k EPROM card!

See the review of Spellmaster on page 30 in this issue for full details of the facilities it offers.

To obtain your copy at the special Club price send your cheque/PO's for £50.00, made payable to the **"Z88 USERS' CLUB"**. You MUST quote your membership number, name and address, and all orders must reach the Club by 31st October 1988 Any orders received after this date will be returned.

Please bear in mind that at the time of writing the Spellmaster program is still being debugged before final release, so please allow at least 28 days for delivery. The version of Spellmaster supplied under this offer will be the final production version, with manual and retail packaging, not a beta-test version.

Overseas members may take advantage of the offer, but should include an extra £5.00 to cover registered postal costs overseas. Also all overseas members please note that as always, cheques must be in pounds sterling and drawn on a U.K. bank. I'm afraid we cannot accept credit cards for either U.K. or overseas orders.

NEWSLINES

** A SPLITTER box for the Z88 RS232 interface is being manufactured by E.F.S. of Cambridge. This 3-way switched splitter will allow you to leave up to 3 RS232 devices connected, and switch between them depending which you wish to use. This means, for example, that you could use a modem, a printer, and another computer connected to your Z88, and use them all without the normal lead swapping. The sockets on the splitter are 9-way females, the same as on the side of your Z88, so anything that normally plugs into your Z88 will plug into the splitter. Price is £24.95 and availability should be September. E.F.S. are at Chesterton Mill, French's Road, Cambridge, CB4 3NP. Telephone them on 0223 323143.

** AWARE TECHNOLOGY, a new company set up recently has announced its first product. The SUPERTWISTALITE is a dinky-looking light to illuminate your Z88 display at times when bad light stops play. (At least my wife still tells people I am "playing" with my computer - too many hours spent on the Spectrum, I fear.)

This light sticks onto your Z88 using Velcro, is powered by 4 AA batteries, and even has a flying lead to power your Z88 in times of emergency. All this for just £13.95, or until Haloween a special Members' price of £11.95. Aware Technology are at 13 Whitmore Close, London, N11 1PB. (A Supertwistalite arrived for review just too late to include it in this issue. The review will be in the next issue, but if you would like to see it before then please send SAE for an advance copy.)

** DESPITE THE initial batch of 500 CC modems selling well, it looks as though the 1200P might be short lived as the 'official' Z88 modem. The problem appears to be the fact that the 1200P is not BABT approved meaning that Dixons will not stock it. It would appear that CC will be

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seeking a similar pocket-sized approved modem - possibly one from Dataflex Designs - to give their seal of approval, in the hope that Dixons will stock it. One drawback, the approved modem is almost bound to be more expensive than the £149 1200P - £199 + VAT ?

** CAMBRIDGE COMPUTER have taken the so-far unprecedented step of issuing a Press Release in support of someone else's product! The document in question heralds the arrival of a new database package for the Z88 which will "...undoubtedly unleash the tremendous potential the machine has for hundreds of serious business applications involving portable data capture." Exciting stuff!

The product in question is of course zBASE from Wordmongers. Cynic that I am, when I received the Press Release in early August I couldn't help wonder at all the "tremendous potential" being "unleashed" by a product which was not at that time available in its finished form, only as a beta-test version to a small number of users!

Seriously, zBASE is a product with amazing potential, but the above is perhaps more of a comment on the pre-emptive style of CC, even announcing other people's products before they are available! zBASE should be on sale at the PC Show in September.

(Because at the time of writing zBASE was still in its beta-test version, I felt that it was unfair to do a comprehensive review of a program which still might substantially change. Hopefully next issue....)

** THE REST of the Newslines are notable by their absence. This has been a very quiet period, with few new products or software. Hopefully things will perk up for the next issue.

MEMBERS' LETTERS

Steve Marsh (0770)
Purley

Dear Roy.

Firstly, I must congratulate you on your first class magazine. When I bought the Z88, I was disappointed with the level of detail contained in the manual. I was sure that more could be done, and Z88 Eprom has revealed many of the secrets to me already!

I have some comments to make on points that have arisen in previous issues:

Ni-Cad Batteries

I had made an external battery pack, as suggested in an earlier copy of Eprom. However, I only used 4 batteries since I was concerned that on a full charge, 5 batteries can deliver as much as 7 Volts and thought this a bit on the high side. With only 4 batteries, the BAT LOW symbol comes on very quickly, but I was not unduly concerned as there was plenty of charge left. Sure enough, after about 1 week's intensive use the screen flickered and died. Not being worried I pulled the battery pack out and ran it from the internal alkalis (1 week old). 2 minutes later, these packed in too! I can only suppose that when the battery low symbol is on, the Z88 draws power from whichever source provides sufficient voltage. Needless to say, I now have a 5 battery pack.

Spool Files.

I have been trying to find a way of Cataloguing files from within a Basic program. I have tried using a command along the lines of:

```
*CLI #F#+S|CF:RAM.1//*~E~E#-S#B
```

and this appears to work, as The Basic program can then access the file :RAM.-/S.sgn and find all the file names - a long winded way, but the only one I could think of.

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In doing this, I appear to have uncovered a bug. If you replace the drive specifier RAM.1 with * (don't do this unless you have a complete backup available) this should create a spool file containing a list of all files wherever they are. This appears to work, but in doing so seems to have corrupted the memory. If you try and issue the command a second time, then you will notice that the file S.sgn appears in the catalogue twice (!), whilst only appearing on the directory once.

An attempt to delete this file causes either an "In use" error or a soft reset. Even after a soft reset there is a problem with the :RAM.- drive; any files stored there sooner or later appear to cause the same problem. For example, later on I got an "in use" error when using the basic patch command "*E.". On investigating RAM.- I found at least 30 separate entries for the file E.cli. I could not find any way of deleting these, and so a hard reset was the only way out.

I think that the problem is caused by the file being catalogued as it is being created, confusing the system, but I would welcome others thoughts on this point.

If any of you use a modem, I can be contacted on Prestel mailbox 016570301.

Chris Robinson (0131)
South Croydon

Dear Roy,

Thank you for helping me find the supplier of my "new" Spectrum at the ZX Microfair. They are now replacing the faulty machine.

Firstly, a query. What does Z or ZZ do? Next, an anomaly. When using the +K option of recording keystrokes to write an execute CLI file, the key is recorded as ~C, whereas the manual ignores this and

instructs us to use | instead. In fact there are one or two such anomalies: □I does the same as pressing the INDEX key. ◇ TAB does the same as ◇CFC. And there is some duplication of facilities: ◇DEL = ◇Y , SHIFT DEL = ◇G etc and why should all these be on the reference strip when other facilities aren't?

And now for a bit of fun that could also have an interesting use. I call it "PICTEXT". This utilises Pipedream's page map facility to illustrate text. If the page map is set smaller than the page width, it cannot show all the text that has been typed. To make illustrated text, characters have to be entered on the part of the document that will be mapped that will make a picture on the map but can be lost from view on the main window where eight lines of text relating to the picture can be displayed as in the example below.

Before you start, □S to the panel and change the map size to 26. Now type this CLI file in Pipedream (without the explanatory comments added in square brackets):

```
#P [To call Pipedream - make sure there's no suspended
document.] |eac |eac |eac |eac |eac |eac |eac |eac |eac
|eac |eac |eac |eac |eac |eac |eac |eac |eac |eac
|eac |eac [to add 22 columns]
|cgsAl~E [To send the cursor back to the beginning]
|Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T
|Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T
|Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T
|Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T |Wl~E~T
[To make 26 columns 1 character wide]
|W82~E [Column AA is 82 characters wide for text]
```

Copy these X's into the columns as shown. You will have to use TAB, SHIFT TAB, ◇TAB or ◇CGS to take the cursor to the column where you wish to type.

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```

ABCDEFGHIJKLMN OPQRSTUVWXYZ
1                X
2                X
3                X
4                X
5                X
6          XXXX X
7  XXXXXXXXXXXXXXXX
8  XXXXXXXXXXXXXXXX
9  XXXXXXXXXXXXXXXX
10XXXXXXXX XXXXXXXX
11XXXXXX XXX XXXXX
12 XXX  XXXX XXXXX
13      XXXXX XXXX
14     XXXXXX XXXX
15     XXXXXX XXXX
16     XXXXXX   X
17     XXXXX
18     XXX
19     X
```

Then use \diamond CGS AA1 \langle ENTER \rangle followed by pressing TAB. For some strange idiosyncratic reason I don't understand, this won't take you to the next column (which is there and needed but not used), but scrolls the "picture" out of the way. You may now type your description of the horse chestnut leaf to accompany your illustration. Blocks A1 to Z19 can be copied at A20 and at A40 to provide extra leaves.

If you want to minimise the possibility of anyone moving the cursor into the "wrong" sector and discover the secret of your clever trick, use \diamond LFC to fix the cursor in the text column.

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Michael Bernardi (0259)
West Sussex

Dear Roy

Currently on Prestel the PATCH program is available for downloading to BBC and Spectrum machines. This works provided you can port it from the "host" to the Z88. I have managed this and it works well. Micronet are in the process of trying to persuade Wordmongers to add a telesoftware downloader to their Z-Term viewdata terminal.

Talking of Z-Term I enclose a review of Z-Term in a more critical light than the last one, in Z88 Eprom, looking in particular at the viewdata side of the software. Would it be possible for you to produce a "bug sheet" giving details of all the bugs known to exist in the Z88. I know most of them have been documented within the pages of Z88 Eprom but finding them when scattered in each edition is a little difficult.

The Computer Concepts Spellmaster is going to be my next purchase for the Z88. My spelling has always been a bit "inventive" and working on a portable on coach or train makes mistypes very easy. At the Beeb & Elk Show last month CC said it should be ready by June. All they need to do is blow the EPROMs, which cannot be done in-house due to hardware/interface problems.

Given the price of Z88 EPROM cartridges, would it be cheaper to supply software on disks for the various machines, eg BBC, PC, Spectrum, QL etc and supply some file transfer software and cables for a reduced rate, or even free. After all a connecting cable and software could be produced for about £10, a floppy disc at 50p + £4.50 for the software, game or utility, and the whole lot costs less than the price of a blank EPROM! Of course this would only work for those who have other machines, and would not work for ROM based software like Z-Term but for other stuff...

HINTS AND TIPS

Steve Marsh (0770)

Help! Does anyone know how to access the ROM? Presumably it requires some memory to be paged in and out, which can only be done by a machine code program, but it should be relatively simple to do - as long as the memory map is known.

Can anyone tell me how to add an application to the Applications menu on the Index? I presume that it can only be done from an Eprom, but how?

Is there an easy way of moving a block of files from a root directory to a subdirectory? The only way I could manage it was by using the RAM.- drive as a temporary store, or by copying files one by one.

Simon Phipps (0221)

Automatic Diary Page Turner

I use the alarm facility to turn the page on my diary every day. I have set an alarm as follows:

Date & Time: Midnight tomorrow

Reason/Command: #D|CT#A~R~R~E#D

Bell: Off

Alarm type: Execute

Repeat every: 1 Day

No of Times: Forever

This wakes the Z88 up at midnight and uses the CLI facility to summon the diary (#D) and execute a "go to today" instruction (|CT). It then summons the alarm (#A) and cancels the alarm instance by moving the cursor right twice (~R~R) and pressing enter (~E). Finally, it returns to the diary ready for viewing (#A). The only caution to be exercised is to ensure that there is nothing pressing on the keyboard when the Z88 is laid aside for the night, otherwise it will not switch itself off after the time specified in the panel.

Anne Celnick (0592)

Transferring BASIC files from BBC via PipeDream to BASIC in the Z88: Entering programs is easier with the full screen editor of the BBC but when I followed the instructions in The Micro User (Jan 88) to transfer my program, I could not understand why it would not execute into BASIC - it ran so far then hung up.

The problem turned out to be that in PipeDream, the file loaded in with a margin on the left hand side and I was entering "#B" ".J" and "NEW" in line with the line numbers. This seems to cause the file, when saved and executed in BASIC, to appear as one continuous line, so when the line reached 255 characters (I assume that, like the BBC, this is the limit for lines in BASIC) it hung up. The solution was to enter the commands at the beginning of the line, not indented to line up with the rest of the program.

When transferring PipeDream files into Interword on the BBC (I use the program listed in Micro User) the easiest way to remove the unnecessary line return codes is to use the Search and Replace facility, entering ||M as the characters to be replaced. Although this also removes paragraphing, it is quicker to put that back in than to delete returns line by line.

On a daisywheel printer, it is useful to be able to change the wheel and the pitch without switching off the printer. I have not yet discovered how to pause the printing from PipeDream while the wheel is changed (can anyone help?) but pitch change can be achieved using the User Defined highlight codes as follows:

To change to 15 pitch: 27,31,9
To change to 12 pitch: 27,31,11
To change to 10 pitch: 27,31,13
To turn off any of these use 27,13,80.

(Anne also sent the printer codes for a Juki 6100, but rather than print them here I have decided to adopt a different approach - If you use an unusual printer with the Z88, then please send me details of your printer driver, (including full details of the PrinterEd, Panel settings, and any changes to the printer's DIP switches.) I will keep a file of printer driver details, and periodically print a list of printers for which I hold the information. - Ed)

R. Barrett (0727)

The RS232 port can be accessed directly from BASIC. This is very important for any program designed to test a computer peripheral, but these features are not described in the Z88 manual. The input/output is done using the BPUT and BGET commands. Normally these write directly to a data file in RAM, but on the Z88 the file output can be redirected to the serial port (COM.0) as in the following example:

```
10 CHANNEL%=OPENIN("COM.0:")
20 BPUT# CHANNEL%,OUTPUTBYTE%
30 INPUTBYTE%=BGET# CHANNEL%
```

Line 10 opens a file for input/output, line 20 outputs a byte, line 30 inputs a byte. The value of CHANNEL% returned after the OPENIN is 118. Therefore PUT 118,x will output byte x on the RS232 port.

Richard Russell (0365)

Regarding the query about "Kim Howard" in the Z88 ROM - the explanation is simple, she is a friend of mine! Incidentally, there is a much easier way of printing the message than the one given in the magazine: Just enter PRINT \$&FE45 or PRINT \$-443.

Chris Elliott (0662)

P W Thorne suggests that a little used character can be used as a "pad" character. In fact, although not documented, one is provided already. ◇[space] gives a

dotted underline on the screen, and ASCII 160 which on an Epson (not in graphics mode) is a space, so it is not necessary to use translate.

Peter Bradbeer (0513)

The July 1988 issue of Personal Computer World magazine contains details of interfacing the Z88 to the Atari ST. A suitable lead is described, and a software listing in GFA BASIC.

Ian Braby (0123)

Spectrum based Z88 file archiving is possible and the requisite program is available as Telesoftware on Micronet's Z88 Corner (*8000181#). There is also a Tasword-to-PipeDream conversion utility available there.

With regard to a BBC BASIC manual, I'd recommend Donald Alcock's "Illustrating BBC BASIC" published by Cambridge University Press at £6.95 (or it was when I bought a copy). It is well laid out, straight forward and has lots of examples plus a keyword index which is very useful.

Leo Gajsler (0464)

Other members may find the following simple CLI procedure useful - it implements an autosave facility from PipeDream, in this case every five minutes.

```
#A~R~E~D~D||FS~~E~D~D~R~D~R~D~D~D~D~D~U~U~U~U~R~D~E~E
```

Type the above into PipeDream and save as Plain Text as, say, "autosave.cli". When you are working on a PipeDream document and wish to use the autosave facility: Ensure that the file has a name (◇FC), enter the Filer from your document and execute "autosave.cli" (◇EX). The document will then be saved and this will automatically repeat every 5 minutes.

The procedure works by inserting a CLI save command into the Alarm and setting it to go off every 5 minutes

indefinitely. Therefore be sure to remember to clear the Alarm (twice) after you have finished working or you could end up with flat batteries!

Derek Jones (0723)

Should anyone be interested, Filofax size tractor paper is available from LEFAX, 28 Shelton Street, London WC2H 9HP, 01 836 1977, at a cost of £18 for a pack of 500 sheets Ref 1911. The above address is their shop, mail order dept. is at 9, Murray Street, London NW1 9RE.

Alan Butcher (0471)

The short program by Ian Braby on page 11 of Vol 1 No 2 doesn't always round up in the conventional manner, but if line 20 is amended: 20 @%=&2020A:A=(V/1.15):B=V-A (50 @%=&90A:END) to be added, the printed values of A and B will always be correctly rounded up.

SOFTWARE REVIEW: IMPEXP80 By C-Port

By David Prestage (0426)

IMPEXP80 is a program for painlessly transferring text and programs between the Z88 and other computers. The version I have is for the Amstrad PCW.

At a cost of £30.00 (or £29.95 if you like to be taken in by that particular sales gimmick) you receive one 3" disc containing the IMPEXP80 program and a serial cable to connect the Z88 to the Amstrad.

If you do not already have one you will need an interface connected to the rear of the PCW. There are a number on the market including the 'official' one from Amstrad but I would highly recommend the SCA interface (advertised in all PCW magazines) as now it is totally compatible with all software it is as good and as cheap (or expensive depending on your bank balance) as the 'official' model and gives you a real time clock, backed up with a rechargeable battery, for free.

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But I digress. IMPEXP80 is simplicity itself to use. I have made a self boot disc by copying CP/M, SUBMIT.COM and a PROFILE.SUB file onto a disc which contains a copy of the IMPEXP80 program. The PROFILE.SUB has one instruction 'IMPEXP80' and the program loads from switch on.

I also have a copy of the PD program NWSP.COM which I use to obtain details of the disc directory as I can never remember the exact name under which I saved every program but, as I will explain, using this program causes problems.

The opening menu gives 7 options. As with all things computer, 0 to 6 as follows:

- 0 EXIT
- 1 RECEIVE FILES FROM Z88
- 2 SEND TEXT FILES TO Z88
- 3 SEND BINARY FILES TO Z88
- 4 PRINTER SERVER
- 5 CONVERT PIPEDREAM TEXT FILES TO CP/M TEXT FILES
- 6 CONVERT CP/M TEXT FILES TO PIPEDREAM TEXT FILES

You just key the appropriate number then ENTER and you are ready to go. If you make a mistake, press the CANCEL key and you are back in this menu.

'0' takes you back to CP/M and the A> prompt.

'1' will ask you to enter destination drive and then informs you it is 'WAITING'. You select IMPORT/EXPORT (squareX) on the Z88, select t S)end, enter the filename you wish to send, press ENTER and away it goes. This selection will allow wild cards so it is possible to send every file to the PCW with one instruction, eg :RAM.*/*.*. However if you are into directories the command needs all the extra '*' and '/'s.

'2' is a little more complicated. You need to enter the filename of the file you are sending. Again wildcards are supported but in this case be careful as the Z88 memory is not as large as the disc's capacity, particularly drive B. At this point you will be asked for the 'destination path' which in most cases means the RAM card you wish to send it to. You can direct the file to a particular directory at this point. You are also able to change the files name by adding this to the destination path. Before ENTER is pressed the Z88 is prepared as above but this time 'R)eceive' or 'B)atch receive' is selected. You do not need to enter the name of the files being received unless you wish.

'3' I have never used this and the manual says it is similar to 2 above. I get the impression it has something to do with transferring machine code.

'4' is very useful. Press 4 and ENTER on the PCW. Put paper into the printer. load the file you wish to print into Pipedream, press diamondPO and the file is printed. I found the default setting of PrinterEd in the Z88 worked well with the PCW printer but all the fancy tricks of LocoScript are not available. Great hard copy for reference but hardly letter quality. Note: only files saved as 'plain text' can be printed this way.

'5' gives a facility which I feel is redundant. It converts Pipedream files which have been saved as 'plain text' to be used in CP/M or LocoScript. However I have loaded plain text files straight into LocoScript (using 'insert text') without any problems at all. Every line has a carriage return at the end which must be removed for formatting to the document layout but that is all. Maybe I have missed something.

'6' I feel this is the same. ASCII files load into Pipedream without any problems. When I have time I will carry out some experiments and report back if I find anything different.

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In conclusion, a very useful program and with it my productivity has improved considerably. Well worth the £30.00. They tell me an update is in the pipeline but will not say when it will be available.

C Port Ltd. can be found at London House, 266 Fulham Road, London SW10 9EL. Telephone 01-376 5098.

Now for the problem I found. As I mentioned I use the NWSP.COM program for my 'housekeeping' in CP/M (see * below) and I have a copy on my Z88 boot disc. However I find that whenever I use the '0' option and enter NWSP all is well until I re-enter IMPEXP80 and try to send files to the Z88. Nothing happens. In one case a file was transferred from the Z88 but only once and recently nothing in either direction.

All I can think of is that NWSP alters the memory that IMPEXP80 uses (or maybe parts of it are still in the memory) as a re-boot solves the problem. I have not tried DIR but I am sure it will not cause the problem as it does not need to be loaded from disc. To replace NWSP the disc will need at least SHOW, DIR, TYPE, ERASE and RENAME on it and I will have the nuisance of loading each one as I need them. I mention this in case anyone uses the IMPEXP80 with a memory resident program and it does not work. It may not be the fault of the IMPEXP80 programs. Also when I first started using the program with NWSP I found some of the files transferred in a corrupt form. At the time I thought it was IMPEXP80 (after all it could not possibly be me) but since using the program without entering NWSP I have had no problems.

* For those of you who do not know about NWSP.COM it is a PD program which carries out the operations of PIP, ERASE, RENAME, TYPE, SET, DIR, SHOW, TYPE and others as well as Squeeze and Unsqueeze files. Everyone should have one and it is free. If you would like a copy send me a formatted disc, return label with stamps and a package that is capable of being reused, eg a padded envelope, and I will be happy to copy it onto the disc.

Mr. D. Prestage, 47 Knighton Rd., Otford, Kent. TN14 5LD

MEMORY PAGING ON THE Z88

by Mark Stevenson (0716)

This is an introductory article that will explain in detail how some of the Z88 hardware and operating system work below the surface of the applications software. I have been 'digging' with the help of the BBC BASIC and its built-in assembler. The assembler provides direct access to the Z80 processor at the heart of the machine and as part of this article I will provide a listing that will enable you to carry out your own experiments. At this point I should warn you that this low level fiddling with OZ may cause the machine to crash if you make a typing error. So please don't experiment without backing up any important information - you may have to perform a hard reset and this will cause a loss of all files held in RAM.

First a little outline of the hardware in the black box: There is a CMOS Z80 processor, a 128kbyte ROM containing the OZ operating system and the other applications programs, a 32kbyte RAM which is used as workspace and file storage by the applications software, a power supply generating several regulated voltages, a large custom control chip, and that's about all! That 84 pin custom chip is kept very busy and handles the LCD screen, the memory mapping, the serial port, and a host of other functions.

The first question you may be asking is how does an 8 bit processor like the Z80 manage to access all that memory? The trick is called "paging" and the Z88 actually has a very flexible system. In fact the machine's normal address space of 64kbytes is split into four 16kbyte pages. Within each 16kbyte section any one of 256 pages may be selected, thus the total memory addressable is a vast 4 megabytes!

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Which four pages are currently selected in the 64kbyte address space is controlled by the operating system, and it does this by writing to paging registers within the custom chip. The page numbers are split as shown below:

00-1F	Internal ROM (OZ)	512k max.	128k used
20-3F	Internal RAM	512k max.	32k used
40-7F	Expansion Slot 1	1024k max.	
80-BF	Expansion Slot 2	1024k max.	
CO-FF	Expansion Slot 3	1024k max.	

The first 32 pages are reserved for the on-board operating system and applications ROM. Only the first 8 are used at present. The next 32 are set aside for on-board RAM. Thus up to half a megabyte could be addressed internally, but only 2 pages are used by the 32kbytes currently fitted. I understand that the circuit board will actually take a 128kbyte chip - perhaps the Z89? (Or even 256k? - Ed). The remaining 192 pages are split evenly between the three expansion slots, allowing up to 1Mbyte of RAM or ROM to be plugged into each. Thus by writing new values to the paging registers any chunk of external RAM, ROM, or internal RAM or OZ ROM may appear anywhere in the Z80 address space.

When BBC BASIC is running as the current application the map registers are loaded with the following values:

&20, &41, &42, &06

(This assumes that expansion RAM of at least 128kbytes is fitted in slot 1) The first three values indicate that internal RAM page 20 and external RAM pages 41 and 42 are allocated for BASIC workspace, and the fourth value that page 06 of the internal ROM contains BASIC.

The page selection registers are at I/O addresses &D0, &D1, &D2 and &D3. The operating system keeps a copy of the current values in locations &4D0 to &4D3. In fact the OZ keeps a copy of all I/O values written in page &400.

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The listing below is a program that containing a short machine code routine that allows any page in the 4 megabytes to be selected and examined from BASIC. It does this by saving the current page number for the memory addresses &C000 to &FFFF and inserting its own value. The section swapped out is actually the BASIC ROM, but since we are using a machine code routine at that time it does not matter that the ROM is missing, provided that it is restored before we return to BASIC.

The program asks for the page number required (00 to FF hex) and also the range of addresses to be listed (C000 to FFFF) - do not enter the & sign as this is not needed. The memory is then dumped to the screen as both hex values and the ASCII equivalent character. Pressing any key will pause the display, another key will start the scroll again. The output can be sent to the printer port by using +P (see the Z88 manual).

As an example enter page number 7 and list from address FF57 to FFC0. In operating system 2.2/3.0 this displays a list of people involved in the design of the Z88 which is normally hidden from view.

```
10 REM JMS 12-6-88
20 DIM S%(15),Z% 100
30 PROC ASM
40 PRINT"PAGED MEMORY DISPLAY"
50 INPUT"PAGE : "C$:C%=EVAL("&"+C$)
60 INPUT"START ADDR. : "C$:A%=EVAL("&"+C$)
70 INPUT"END ADDR. : "C$:D%=EVAL("&"+C$)
80 M%=0
90 REPEAT
100 H%=(A%+M%) DIV 256: L%=(A%+M%) MOD 256
110 S%(M%)=(USR(ROMBYTE) AND &FF0000) DIV
&10000
120 M%=M%+1
130 IF M%=16 THEN PROCPRNT:M%=0:A%=A%+16
```

```

140 T%=INKEY(0): IF T%<>-1 T=GET
150 UNTIL A%>= D%
160 IF M%<>0 THEN PROCPRNT
170 END
180 :
190 DEFPROCPRNT
200 PRINT;RIGHT$("000"+STR$ A%,4);": ";
210 FOR Q%=0 TO M%-1
220 PRINT;RIGHT$("00"+STR$ (S%(Q%)),2);" ";
230 IF Q%=7 PRINT;" ";
240 NEXT
250 PRINTTAB(58);
260 FOR Q%=0 TO M%-1
270 B%=S%(Q%) AND &7F
280 IF (B%<&20)OR(B%>&7E) PRINT". ";ELSE PRINT CHR$(B%);
290 NEXT
300 PRINT
310 ENDPROC
320 :
330 DEFPROC_ASM
340 FOR X=0 TO 2 STEP 2
350 P%=Z%
360 [
370 OPT X
380 .ROMBYTE
390 LD A,(&4D3) :PUSH AF
400 LD A,C : LD (&4D3),A :OUT (&D3),A
410 LD A,(HL) :LD L,A
420 POP AF :LD (&4D3),A :OUT (&D3),A
430 RET
440 ]
450 NEXT
460 ENDPROC

```

(As Steve has already stated, be very careful when entering the program, and check it carefully before running it, as a mistake could quite easily reset your Z88! - Ed)

TK

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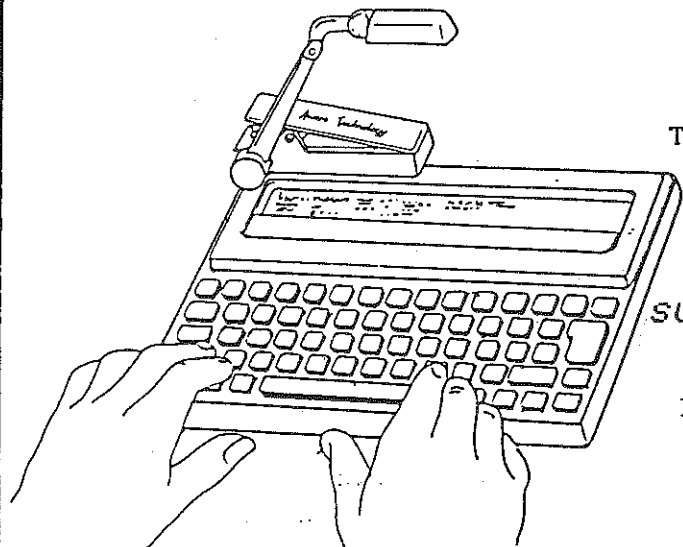
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This advertisement was produced using Locoscript 2 with Locochar on an Amstrad PCW with fabric ribbon - so there!
Line drawing by Lynne Blything - many thanks.

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zBASE is a productivity tool based on the concept of the interactive or command file driven relational database.

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Interactive Commands

Because zBASE has a fully interactive mode, no programming skills are necessary.

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A further option provides output files in a form acceptable to many large PC systems such as dBASE II, III and IV, word processor data files and spread sheets.

Command files

For more advanced programmers, or people who want to exploit the full potential of zBASE, a full command file processor will run command files written using PipeDream.

full screen addressing allows formatted input/output, and the z88's own CLI redirection system allows for output to printers or a data file.

Complete data manipulation suites can be written by programmers for use by inexperienced users. Such users can carry out the most complex operations with just one command: DO PROGRAM

Users of dBASE II will find zBASE strangely familiar.

Wordmongers Ltd., Unit 21, Edison Road, Aylesbury, Bucks. HP19 3TE

Software developers wishing to sell zBASE application programs will be able to participate in a developers scheme under which they will be able to supply run time versions of zBASE to accompany their code. Included in the developers kit is a routine to encode the command files and provide a degree of protection against copyright infringement.

zBASE is available in August 88 at a price of £69.00 inc VAT.

Available from Wordmongers Limited or z88 Dealers.

For a limited period only, the 10% discount offered by Wordmongers on its other software will be available to z88 Users' Club members on zBASE.

For programmers and others, here is a list of the commands supported by zBASE:

```
*
? exp
&indirect variable (macro)
AT SAY exp
AT GET var
APPEND BLANK
APPEND FROM file PD DELIMITED
FOR cond
```

```
CLS
CONTINUE
COPY TO file PD DELIMITED
CREATE file1 FROM file1
DELETE RECORD
DELETE FILE file
DISPLAY FOR cond FIELDS
DO command
DO WHILE/ ENDDO
GO exp / TOP / GO BOTTOM
IF / ENDIF
LET var=exp
LIST
LOCATE
QUIT
RECALL RECORD
RENAME file1 TO file2
RETURN
SELECT p/S
SKIP exp
USE filename
WAIT
```

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PipeDream

PipeDream is now available for the IBM PC and compatibles, and the Acorn Archimedes. It has been completely rewritten for these computers and contains many new facilities, whilst retaining complete file and keyboard compatibility with the Z88.

PipeDream on the PC or Archimedes makes the ideal companion for your Z88. With just a connecting lead and the PC LINK II EPROM you can load files directly from the Z88 filing system into PipeDream on the other computer and continue working with no loss of information. Now you can use PipeDream on the computer in your home or office as well as using it in the Z88.

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- ◆ function keys
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PipeDream for the IBM PC and PipeDream for the Acorn Archimedes costs £99 + VAT.

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For the Z88

B

ased on one of the most successful programs for the BBC Micro, SPELLMASTER has now been re-written for the Z88. Supplied as a plug-in ROM cartridge, it can be permanently available - there is no loading of programs from disc etc.

Using the built-in editor SPELLMASTER provides check-as-you-type combined with fast and simple text entry. Other features include:

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- User extension dictionary allows this number to be extended.
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- Fast word search, available as a pop-up from within any Z88 program, that searches through the ROM for any of the following:
 - Words that sound like the one specified.
 - Words that are spelt approximately like that specified - this is ideal for guessing mistyped words.
 - Words that have one or more letters missing (solves crosswords).
 - Words that have the correct letters, in the wrong order (solves anagrams).
- Browse through the dictionary.
- Built-in text editor. A simpler more straightforward text editor than Pipedream. This editor offers the following:
 - Fast scrolling.
 - Read and write Pipedream text files.
 - Block delete, move and copy.
 - Insert or Overwrite modes.
 - Pipedream like deletes - back forward, word, line etc.
 - logical standard editing features, i.e. words wrap as you type, lines can be split by pressing RETURN at any point, lines may be joined by deleting back from the line start.
 - Check-as-you-type, without slowing down typing.
 - Spell check entire text at 5000 words per minute.
 - Check word at cursor.
 - Check text from cursor onwards.

The real use of SPELLMASTER is not always in correcting spelling mistakes. Few people are expert typists, especially on a lightweight portable such as the Z88. SPELLMASTER can detect typing errors just as easily as spelling mistakes and can ensure that text entered on the Z88 is correct before it is downloaded to other computers.

SPELLMASTER is more powerful, and certainly more convenient, than many spelling checkers provided on larger micros.

Price £51.30 + VAT (£59.00 incl.)



Computer Concepts Ltd

Gaddesden Place Hemel Hempstead Herts HP2 6EX. Tel: home 0442 63933

SOFTWARE REVIEW - Z88 SPELLMASTER

At the time of writing (mid-August) Spellmaster is a unique product in a number of ways: It is the first spelling checker for the Z88; it is the first Z88 application on a 128k EPROM; and the first single EPROM to contain more than one application.

Spellmaster for the Z88 has been developed from Computer Concept's spelling checker for the BBC Micro; a program that has got consistently good reviews. With this distinguished pedigree, I approached the job of reviewing Z88 Spellmaster with a mixture of excitement and trepidation - in case this new version did not live up to its promises.

The 128k EPROM containing Spellmaster is installed in the normal way - go to the INDEX, and leaving the Z88 switched on, open the card slot cover and insert the card in a free slot. When you close the card slot cover, the Z88 reads the header file from the newly inserted card, which tells it whether the card is ROM or EPROM, and if it is ROM, the title(s) of the new application(s).

As I said earlier, the EPROM produces two new entries on the application list: Q for QuickEdit (an application) and W for WordFinder (a pop-down)

QuickEdit is not so much a word processor as a text editor; that is, it offers some of the facilities of a word processor allowing the entry and editing of text, but it does not support printing, or provide the layout facilities provided by a fully fledged word processor.

Computer Concepts have been quite clever in the way they have implemented this. Their main aim was obviously to provide a mechanism to allow files to be spell-checked.

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The obvious way to do this would be to try and integrate the new spell checking code with PipeDream - a solution fraught with problems, due to the incredibly complex workings of PipeDream.

This complexity actually led Computer Concepts to the solution for their problem - they realised that for many simple word processing applications the complexity and inherent flexibility of PipeDream was actually a handicap - some people were confused by the multi-column layout, and many did not need to integrate spreadsheets for much of the time.

Their solution, QuickEdit, is really killing two birds with one stone: By implementing a simpler text editor on the Z88 they are filling a need, and this is also the mechanism for checking the spelling of files prepared either in PipeDream or QuickEdit.

When entering QuickEdit with Q you are faced with a screen display which appears to be a cross between PipeDream and BASIC - on the left a list of five menus, a text window 80 columns wide in the middle, and to the right a status area using approximately the same area as the PipeDream page map. The list of menus will be familiar to anyone used to using PipeDream; they are Blocks, Cursor, Edit, Files and Spelling. Compared to PipeDream, missing menus are Options, Layout and Print - the Options page is partly replaced by QuickEdit's I (for Information) which drops down a status window about the current document. Layout and Print are not there because QuickEdit does not support the functions covered by these menus, printing a document being achieved by first loading it into PipeDream.

The extra menu - Spelling - is really the one that concerns us. It offers the following options, all concerned with controlling the spelling checker:

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Check all text	◇CA
Check from cursor	◇CC
Check this word	◇CW
Check marked block	◇CM
Check as you type	◇CT

All these are self explanatory, but the last one deserves a special mention. With 'Check as you type' switched on, the program will check the spelling of each word when you enter the following space - if the word is not recognised, the Z88 'beeps' to tell you this. At this stage you really have two options; to ignore the beep and carry on typing, or to press ESCape which invokes the spell-checking display.

This display consists of two windows, the right hand one titled 'Guesses' - to display any words which the program thinks might be the right spelling of the incorrect word. The left hand window is the 'Correction Window', which gives you five options for the incorrect word: Pressing '1' simply ignores the word, leaving it unchanged in the text, something you might choose if for example, the word was someone's name or address.

Choosing the second option adds the word to the current user dictionary - this is held in RAM, and you can add as many specialist words as you want; person or place names, technical jargon, often used abbreviations etc.

Option three - Guess Correct Word - The program starts guessing immediately it finds a mistake, but if for example you were to ESCape from this guessing mode, option 3 makes the program start guessing again.

Pressing '4' presents the word for editing, and once changed all occurrences of the same word are also amended.

Option five, 'Browse through dictionary', allows you to do just that, and might be useful at those times when you are 'grasping' for the right word! This is identical to the browse option in the WordFinder pop down, described later.

Depending on your choice, the word is amended or otherwise, the two windows disappear, and you can then carry on typing your document until the next error!

Check as you type obviously only works in the QuickEdit application. If you wish to check a document that has been entered using PipeDream, or if you prefer not to have your QuickEdit input checked as you type, the other method is as follows:

In the case of a PipeDream document, you must first save it to the Filer. Then invoke QuickEdit, do a familiar \diamond FL to load the document, then do \diamond CA (Check All) to start the checking process. When the program finds what it thinks is an error, the same two windows pop down, presenting the same range of options as already explained. This then carries on until the whole file is checked.

Where possible the author, James Lynn, has tried to maintain command compatibility with PipeDream - doing \diamond S in both programs changes case, for example. Additions to the Files menu handle the loading and saving of user dictionaries. User dictionaries can be merged within PipeDream, as they are in the form of a Plain Text file with one word on each line.

The WordFinder pop down can be called from any Z88 application, which allows you to interrogate the Spellmaster dictionary from within PipeDream. The pop down presents a menu with four options:

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Browse through dictionary - Opens another window with the words, which may be scrolled word by word using the cursor keys, by first letter using \diamond and cursor (from AARDVARK to BAA), or by second letter using shift and cursor (from BAA to BBC).

The second option - Find Anagrams - will take a string of letters, and check the dictionary for any words made up of the same letters.

Find Close Matches will take a word and try and find the nearest match from the dictionary; this copes well with inkorrekct spelings (!), but will only cope with one mistake in a single word.

The last option - Solve Crossword - prompts for entry of a string of letters, with # substituting unknown single letters, and * substituting any number of letters.

The version of Spellmaster I reviewed was actually a pre-production version, so some details may change by the time it is released. The manual I got was also pre-release, but looked to be very comprehensive, properly typeset and well-written.

That just about sums up the facilities provided by Z88 Spellmaster. The most important part of any spelling checker must be the dictionary - no matter how good the program is, if the data in the dictionary is poor, missing out common words, for example, then the program itself must be regarded as poor. I think this is one of the strengths of Z88 Spellmaster. The authors have been able to use a dictionary which is well established (the BBC version of Spellmaster has been out for some time), and it coped well with the variety of different documents I used it on, knowing virtually all the commonly used words in my limited vocabulary!

Another good point is the ease with which words can be added to the user dictionary - a facility which effectively gives the user a limitless dictionary, RAM permitting of course!

In brief, Spellmaster transformed the Z88 for me. The label of spelling checker might make some people think that they would have no use for Spellmaster. "I can spell myself, thank you very much", might be the response. I too am a reasonably competent speller, but like many Z88 users, I am not a typist, and so have been dogged by the constant mis-typings that produce guff like ssoon or porgram. The way Spellmaster spots these errors, and even suggests what it thinks you meant, is quite amazing to me. I would recommend it.

PRODUCT: COMPUTER CONCEPTS Z88 SPELLMASTER
PRICE: £59.00 (SEE SPECIAL OFFER ON PAGE 4)

SUPPLIER: COMPUTER CONCEPTS
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SOFTWARE LIBRARY UPDATE

Additions to the Software Library this issue are:

- Z017 City Bomber - a game in BASIC (3k)
- Z018 Eric the Caterpillar Goes Munching - BASIC game (4k)
- Z019A Address book & label printer - up to 300 entries
- Z019B Example file for above (12k total)
By Richard Oliver (0480)
- Z020 Telephone Directory - up to 300 entries (7k)
By Richard Oliver (0480)
- Z021 Fetchall - program which will fetch all the files from an EPROM into the Filer. (1k)
By Richard Russell (0365)

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- Z022A Animal - The Z88 asks you to think of an animal,
Z022B then trys to guess it by asking questions. The
program learns by its mistakes. (5k)
By Richard Russell (0365)
- Z023A to I Utilities by Richard Russell (7k)
A=Saveload B=Encrypt C=Dumpfile
D=Merge E=Checksum F=Fconvert
G=Sort H=Dump I=Bench
- Z024 Kingdom - The well known game of power! (5k)
By Steve Marsh (0770)
- Z025 Readcom - A utility which reads the Z88 RS232
port and loads it into a file. (1k)
By Steve Marsh (0770)
- Z026 Filedump - Utility which dumps files to the
screen (1k) By Steve Marsh (0770)

(Version 2.0 of the BASIC Patch with screen dump contains a bug, which has been fixed in versions 2.d and 2.D. The bug means that the MODE command does not work properly, and could crash the machine. If you have Version 2.0 please send for the bug-free version. - Ed)

SMALL ADS

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